

## REMARKS

Applicant is submitting this amendment after final rejection pursuant to 37 CFR 1.116 because Applicant believes that all claims now presented are in condition for allowance. In any event entry of this amendment will place the application in better form for appeal. Applicant has added no new matter and has raised no new issues in this amendment. Finally the arguments presented herein are in direct response to points raised by the Examiner in the last office action and Applicant could not have filed his response at an earlier date.

Applicant has amended the substitute specification on page 6, following line 3. Antecedent basis for this amendment to the specification may be found in original claim 2, now canceled.

Applicant has amended claims 11, 12, 13, 16, 17, 18, 19, and 20. Antecedent basis for the amendments may be found in the specification on page 4, line 18 to page 5, line 2 and on page 7, lines 12 to 16, and on page 6, following line 3 (see above). Thus claims 11 through 20 remain in the application and are again presented for examination.

The Examiner has rejected claims 11, 16 and 19 last presented under 35 USC 112, first paragraph, on the grounds that the applications fails to comply with the written description requirement found in that section of the statute. Applicant notes that the aluminum-containing alloys Fe-Al and Ni-Al having an Al

content of at least 8% and the aluminum-containing alloys Fe-Cr-Al and Ni-Cr-Al having an Al-content of at least 3% are known in the art. In the paragraph bridging pages 4 and 5 of the substitute specification, Applicant notes that the prior art also discloses that very thin foils made of these aluminum-containing alloys are useful as car catalysts, gas burners, and in filter systems, but that these very thin foils are easily exhausted of aluminum in only few hours due to metastable oxide modifications, and so these components have only a limited life span. Applicant's invention, however, is a method for preparing a stable  $\alpha$ -aluminum oxide protective layer for very thin foils of the aluminum-containing alloys by forming an oxide layer of a non-aluminum containing oxide having a thickness of up to 1000 nm effective to suppress formation of metastable forms of aluminum oxide. Such a method is described on pages 5 through 9 of the present application and is neither disclosed nor suggested in the prior art. In view of the above explanation, Applicant believes that the specification fully complies with the written description requirement of 35 USC 112, first paragraph, making it entirely clear what is disclosed in the prior art and what the Applicant regards as the present invention.

The Examiner has rejected claims 11, 16 and 19 last presented under 35 USC 112, second paragraph, as vague and indefinite for use of the expressions "having an Al content of at least about 8% by weight" and "having an Al content of at least about 3% by weight." Applicant has amended these claims to correct

these expressions to now read "having an Al content of at least 8% by weight" and "having an Al content of at least 3% by weight." All claims now presented particularly point out the invention and are no longer vague and indefinite.

The Examiner has rejected all claims last presented as obvious principally in view of US Patent 5,741,372 to GUGEL. In the case of claims 11 through 15 and 19 and 20, the Examiner bases her refection on GUGEL per se. In the case of claims 16 through 18 the Examiner has combined GUGEL with the ASM HANDBOOK. Applicant maintains that the claims as last presented were patentably distinguishable over the cited prior art and believes even more strongly that the claims as now presented are patentably distinguishable over the cited prior art.

Even though the GUGEL US Patent 5,741,372 contains a very broad definition of the metal and alloy at the top of col. 7 and even though the reference contains an even broader definition of the compounds that may be applied to the metals or alloys to form an oxide surface layer on the metal or substrate, the Examiner will not agree to remove this reference in response to our arguments that the reference is a "broadcast disclosure." Applicant emphasized in the last response not only the very broad nature of the definition of both the metal or alloy itself as well as the compound forming the metal oxide coating, but also the fact that the reference discloses no specific aluminum or aluminum-containing alloy on which a compound forming an oxide surface layer has been

applied. Instead the Examiner has cited several passages from the Manual of Patent Examining Procedure (MPEP) stating that a reference may be applied as effective prior art for all of the information disclosed therein, and not just for the preferred embodiment. Thus the Examiner argues that even though iron based alloys are the preferred embodiment, there is still disclosure of aluminum, aluminum base alloys and aluminum base superalloys in the reference. The reference also mentions that chromium compounds are a preferred group of compounds which may be applied to the metal or alloy itself. Thus the Examiner argues that the reference discloses aluminum or aluminum alloys coated with compounds such as chromium compounds, capable of forming a metal oxide on the surface of the aluminum or aluminum alloy. The Examiner further argues that the coating process takes place under the same conditions that the Applicants employ to coat their aluminum-containing alloy. The Examiner summarizes her arguments made to respond to Applicant's arguments that the GUGEL reference amounts to broadcast disclosure on pages 12 through 15 of the office action.

Applicant finds the Examiner's arguments based upon pure hindsight throughout the office action as especially difficult to explain. The Examiner has repeated the same argument against independent claim 11, independent claim 16 and independent claim 19 that "one of ordinary skill in the art would have expected the  $\alpha$ -aluminum oxide protective layer of GUGEL to be stable since it is made using a method that is very similar to the instant method."

See page 5, lines 8 through 10 regarding claim 11, page 7, lines 13 to 16 regarding claim 19, and page 10, lines 6 through 9, regarding claim 16. Applicant points out that there is no disclosure or suggestion in GUGEL of forming a stable protective layer of  $\alpha$ -alumina on aluminum or an aluminum-base alloy. Nowhere does the reference mention forming such a protective layer. Why would one skilled in the art expect the presently claimed process to produce an aluminum or aluminum alloy coated with a stable layer of  $\alpha$ -alumina as opposed to a metastable layer of  $\beta$ - or  $\delta$ -alumina as discussed in the prior art portion of the present application? What the Examiner has done is to add to the GUGEL disclosure, important facts derived from the present application, which in Applicant's opinion constitutes using impermissible hindsight on the Examiner's part.

To underscore Applicant's argument that the GUGEL reference amounts to "broadcast disclosure" with respect to the coating of aluminum or aluminum based alloys with compounds that produce an oxide layer of a non-aluminum containing oxide, not only is the generic disclosure in GUGEL is very broad, and that GUGEL contains no specific embodiment that comes close to the Applicants' invention, and the utility for the Applicants' invention just not be the same as the utility for the invention disclosed in the reference. However, in order to even more sharply distinguish the presently claimed invention over GUGEL, Applicant has amended the independent claims 11, 16 and 19 to state that the aluminum or

aluminum based alloys are in the form of a foil or thin layer having a thickness of 0.003 to 0.1 mm. Again see page 4, line 18 of the substitute specification. The coating of the non-aluminum metal oxide on the aluminum or aluminum-based alloys has a thickness of up to 1000 nm. Again see page 7, lines 12 through 16 of the substitute specification. According to page 3, lines 15 to 20 of the application, in the background portion of the application, Applicant notes once again that the aluminum foils are useful for forming car catalyst substrates, fiber based gas burners, and filters. These uses for the aluminum foils are far removed from the coated metal objects disclosed in GUGEL used for making machine parts used in machine building. See col. 1, lines 14 to 17 of the reference. The machine parts produced according to GUGEL for example include power plant valves (Example 3), steel nuts and bolts (Example 7) and bearings (Example 10). None of these articles is made of a foil having a thickness of 0.1 mm or less. Applicant is producing metal objects that are both very different structurally and physically from the metal objects produced according to GUGEL and the Applicant's metal foils have a utility very different from that of the metal objects of GUGEL. Thus Applicant believes that GUGEL provides only a broadcast disclosure, that in no way suggests the presently claimed invention and that the method as now claimed is patentably distinguish over the disclosure in GUGEL.

The coated aluminum or aluminum alloy foils prepared according to the presently claimed method have excellent oxidation resistance at temperatures up to 1400° C thanks to the formation of an  $\alpha$ -alumina coating. The source or reservoir of the aluminum to form the  $\alpha$ -alumina is the aluminum or aluminum alloy itself. However, in the case of foils that are very thin there is a risk that the aluminum needed to form the  $\alpha$ -alumina may be depleted from the aluminum or aluminum alloy and as a result the protective layer of  $\alpha$ -alumina does not form. The aluminum or aluminum component will fall apart. Coating the aluminum or aluminum alloy under the right conditions to foster formation of an  $\alpha$ -alumina coating and to inhibit formation of the metastable  $\beta$ - and  $\gamma$ -alumina helps to protect the aluminum reservoir in the component. Nowhere does Applicant find any disclosure or suggestion of same in the GUGEL reference, that is a solution to the problem or even a recognition of the problem.

In Applicant's last response he cited Ex parte Strobel and Catino, 160 USPQ 352 (Bd. App. 1968) as authority for the "broadcast disclosure" argument. Now Applicant also cite In re Petering and Fall, 133 USPQ 275 (CCPA 1962) to further support the argument that a generic formula in a reference that encompasses a vast number and perhaps even an infinite number of compounds; even though applicant's compounds are encompassed by this broad generic disclosure, the disclosure by itself does not describe the applicant's invention. In other words there are limits on the

Examiner's argument that a reference is effective as prior art with respect to all information disclosed therein and not just with respect to the preferred embodiments. According to the decisions that Applicant cited where a reference contains a "broadcast disclosure" that is just such an exception. Therefore Applicant maintains that the generic definition at the top of col 7 of GUGEL of both the metal or alloys thereof, including aluminum, and the compounds used to coat the metal or alloys thereof set forth in the middle of col 7 of GUGEL amount to just such "broadcast disclosure." Applicant's argument is therefore that because the definition of the metal or alloy substrate in GUGEL is so broad and because the definition of the metal compounds used to coat the substrate is so broad, GUGEL does not provide a disclosure that either anticipates or renders obvious the presently claimed invention.

Another reason why the presently claimed invention is not anticipated or rendered obvious by GUGEL because it would not be obvious to try from reading the GUGEL disclosure to coat Applicant's particular aluminum alloys according to the Applicant's process with the particular metal oxides according to the present claims with any expectation that such a process would inhibit formation of the metastable forms of alumina and promote formation of the stable  $\alpha$ -alumina. One skilled in the art reading GUGEL would have to vary all of the numerous parameters and try all of the possible choices set forth in the reference with respect to the

metal or alloy itself as well as the material used to coat the alloy, and therefore would have to pick and choose among all of these variables until one arrived at a successful result. Here the GUGEL reference gave no indication of which Al metal or Al alloy substrate or which coating material applied to the Al-containing substrate would be successful at preventing formation of metastable alumina, and in fact the GUGEL reference does not even mention the problem of formation of metastable forms of alumina on thin aluminum-containing substrates which deletes the reservoir aluminum in the thin aluminum substrate, let alone how to solve the problem. Applicant cites In re O'Farrell, 7 USPQ 2d 1673 (CAFC 1988) and In re Kubin, 90 USPQ 1417 (CAFC 2009) to support this argument.

In the case of claims 16 through 18 the Examiner has combined GUGEL with the ASM HANDBOOK CORROSION PROTECTION METHODS relying on the ASM HANDBOOK for its disclosure of treating an Al substrate with chromic acid, phosphoric acid and fluoride to apply a chromium phosphate coating to alumina. Here the type of aluminum objects to be protected include building, packaging and defense industries. The objective here is to use a chromium phosphate coating because the natural oxide (alumina, perhaps  $\alpha$ -alumina) does not provide adequate corrosion resistance. Applicant is applying his no-Al metal oxide to foster formation of  $\alpha$ -alumina to the exclusion of the metastable forms of alumina to protect his thin foil aluminum alloys which have particular problems concerning the

reservoir of aluminum, and which have specific uses at temperatures up to 1400° C.

In view of the above Applicant contends that all claims now presented are patentably distinguishable over the cited prior art, and that the examiner should reject no claim now presented as obvious under 35 USC 103 in view of the cited prior art.

Applicant believes that all claims now presented are in condition for allowance and earnestly solicit a response to that effect.

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